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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/550,054	07/05/2006	Satish Reddy	100325.0202US	6184

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EXAMINER	
PETTITT, JOHN F	

ART UNIT	PAPER NUMBER
3744	

NOTIFICATION DATE	DELIVERY MODE
08/06/2010	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No.	Applicant(s)	
	10/550,054	REDDY ET AL.	
	Examiner	Art Unit	
	John F. Pettitt	3744	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *18 May 2010*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-9 and 12-21* is/are pending in the application.

4a) Of the above claim(s) *1-8 and 13-21* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *9, 12* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 9 and 12 are rejected under 35 U.S.C. 103(a) as obvious over Alder et al. (US 4,270,937) hereafter Alder in view of Wilson (5,370,851) hereafter Wilson.

In regard to claim 9, Alder teaches a plant (see all figures) comprising: a gasification and shift unit (column 10, lines 9-10) coupled to a dryer (20) to provide a shifted syngas (10; column 10, line 9) as the feed gas (10) to the dryer (20); the dryer (20) comprising a desiccant (column 11, lines 40-43 hereafter scavenger) and configured to receive a feed gas (10) comprising hydrogen sulfide and carbon dioxide (column 10, lines 25-35); wherein dryer (20) configured to receive a feed gas (26) and to produce a desiccated gas that predominantly comprises hydrogen, carbon dioxide,

carbonyl sulfide, and carbon monoxide (column 10, lines 25-35); a source of liquid carbon dioxide (40, 60, 73, 77, 79, and 75) fluidly coupled to an absorber (30 and 35) and configured to provide liquid carbon dioxide to the absorber (30 and 35); wherein the absorber (30 and 35) is further fluidly coupled to the dryer (20) and configured to receive the carbonyl sulfide and carbon dioxide (in 25) such that the liquid carbon dioxide in the absorber (30 and 35) absorbs at least part of the carbonyl sulfide to so form a carbonyl sulfide-containing liquid carbon dioxide bottom product (39), and to further form an overhead vapor (37); and a distillation column (55) fluidly coupled to the absorber (30 and 35) to receive the carbonyl sulfide-containing liquid carbon dioxide bottom product (39) and configured to separate the carbonyl sulfide (57) from the carbon dioxide (56). Alder teaches that the source (40, 60, 73, 77, 79, and/or 75) of liquid carbon dioxide (LCO2) comprises an autorefrigeration unit (40, 33, 73, 77, 79, and/or 75) that is configured to receive and expand the overhead vapor (37) to liquefy the carbon dioxide (carbon dioxide is liquefied both in 40 and in 77, 79, and by 73) and to produce work (work is produced by 73), and that is further configured to separate the liquid carbon dioxide from the overhead vapor (liquid carbon dioxide is separated from vapor after 73, in 79, after 77 and in 85; system components 40, 33, 73, 77, 79, and/or 75 is configured to separate liquid carbon dioxide in 40 from vapor in 50 and 76 or 100).

Alder does not explicitly teach that the dryer comprises a desiccant coated with a carbonyl sulfide hydrolysis catalyst. However, Wilson teaches that his molecular sieve invention comprises a desiccant (column 4, line 32, 46, 64) coated with a carbonyl sulfide hydrolysis catalyst (column 4, line 60-65) and that such may be used for natural

gas drying (column 7, lines 35-40; column 8, line 22). Therefore, it would have been obvious to one of ordinary skill in the art, at the time the invention was made, to modify the plant of Alder with the molecular sieve taught by Wilson for the purpose of providing improved dehydration.

In regard to claim 12, Alder teaches that the autorefrigeration unit (40, 33, 73, 77, 79, and/or 75) further produces a hydrogen containing gas (50 or 76,100).

Claims 9 and 12 are rejected under 35 U.S.C. 103(a) as obvious over Alder et al. (US 4,270,937) hereafter Alder in view of Lewis et al. (US 6,419,895) hereafter of Lewis.

In regard to claim 9, Alder teaches a plant (see all figures) comprising: a gasification and shift unit (column 10, lines 9-10) coupled to a dryer (20) to provide a shifted syngas (10; column 10, line 9) as the feed gas (10) to the dryer (20); the dryer (20) comprising a desiccant (column 11, lines 40-43 hereafter scavenger) and configured to receive a feed gas (10) comprising hydrogen sulfide and carbon dioxide (column 10, lines 25-35); wherein dryer (20) configured to receive a feed gas (26) and to produce a desiccated gas that predominantly comprises hydrogen, carbon dioxide, carbonyl sulfide, and carbon monoxide (column 10, lines 25-35); a source of liquid carbon dioxide (40, 60, 73, 77, 79, and 75) fluidly coupled to an absorber (30 and 35) and configured to provide liquid carbon dioxide to the absorber (30 and 35); wherein the absorber (30 and 35) is further fluidly coupled to the dryer (20) and configured to receive the carbonyl sulfide and carbon dioxide (in 25) such that the liquid carbon dioxide in the absorber (30 and 35) absorbs at least part of the carbonyl sulfide to so

form a carbonyl sulfide-containing liquid carbon dioxide bottom product (39), and to further form an overhead vapor (37); and a distillation column (55) fluidly coupled to the absorber (30 and 35) to receive the carbonyl sulfide-containing liquid carbon dioxide bottom product (39) and configured to separate the carbonyl sulfide (57) from the carbon dioxide (56). Alder teaches that the source (40, 60, 73, 77, 79, and/or 75) of liquid carbon dioxide (LCO2) comprises an autorefrigeration unit (40, 33, 73, 77, 79, and/or 75) that is configured to receive and expand the overhead vapor (37) to liquefy the carbon dioxide (carbon dioxide is liquefied both in 40 and in 77, 79, and by 73) and to produce work (work is produced by 73), and that is further configured to separate the liquid carbon dioxide from the overhead vapor (liquid carbon dioxide is separated from vapor after 73, in 79, after 77 and in 85; system components 40, 33, 73, 77, 79, and/or 75 is configured to separate liquid carbon dioxide in 40 from vapor in 50 and 76 or 100).

Alder does not explicitly teach that the dryer comprises a desiccant coated with a carbonyl sulfide hydrolysis catalyst. However, Lewis teaches that his molecular sieve invention comprises a desiccant (column 4, line 10) coated with a carbonyl sulfide hydrolysis catalyst (column 4, line 20-21; column 3, lines 25-30) and that such may be used for natural gas drying (column 5, lines 36-43). Therefore, it would have been obvious to one of ordinary skill in the art, at the time the invention was made, to modify the plant of Alder with the molecular sieve taught by Lewis for the purpose of providing improved dehydration.

In regard to claim 12, Alder teaches that the autorefrigeration unit (40, 33, 73, 77, 79, and/or 75) further produces a hydrogen containing gas (50 or 76,100).

Response to Arguments

Applicant's arguments filed 5/18/2010 have been fully considered but they are not persuasive.

1. Applicant's arguments (page 6, ¶ 2-3) are an allegation that the prior art does not teach the newly amended limitations. In response, the applicant is directed to the rejection above wherein the source of carbon dioxide, the auto-refrigeration unit, and the overhead vapor now claimed are all identified. Therefore the allegation is unpersuasive.

2. Applicant's arguments (page 6, ¶ 4) are an allegation that Wilson does not teach a carbonyl sulfide hydrolysis coating. It is noted that Wilson teaches a molecular sieve (column 4, line 33) having sodium aluminate (column 4, line 64), which is formed of an alkali metal and alumina and therefore as the material is the same material as disclosed in the applicant's specification (coating comprises alumina coated with an alkali metal oxide - page 9, lines 1-5), the argument is unpersuasive.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the

shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to John F. Pettitt whose telephone number is 571-272-0771. The examiner can normally be reached on M-F 8a-4p.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cheryl Tyler or Frantz Jules can be reached on 571-272-4834 or 571-272-6681. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/John F Pettitt /
Examiner, Art Unit 3744

JFP III
July 15, 2010

/Frantz F. Jules/

Supervisory Patent Examiner, Art Unit 3744